
***Eimeria chelydrae* Ernst, Stewart, Sampson, and Fincher, 1969 (Apicomplexa: Eimeriidae) from the Common Snapping Turtle, *Chelydra serpentina* (Reptilia: Testudines: Chelydridae): First Report from Oklahoma**

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The state of Oklahoma supports 19 species and subspecies of turtles in four families (Sievert and Sievert 2011). Although there is a good deal of information on their helminth parasites (see references in McAllister et al. 2015a), little is known about their coccidian (Apicomplexa) parasites (Duszynski and Morrow 2014). The only study, to date investigating Oklahoma turtle coccidians, was performed by McAllister et al. (2015b) on *Eimeria ornata* McAllister and Upton, 1989 from three-toed box turtles, *Terrapene mexicana triunguis* (= *T. c. triunguis*). Here, we report a coccidian in common snapping turtles (*Chelydra serpentina*), for the first time, in Oklahoma.

During May 2013, April 2015 and again between April and May 2016, four adult *C. serpentina* were collected by hand off roads in McCurtain County, Oklahoma. They were measured for carapace length (CL) and fresh fecal samples from captive turtles were placed in individual vials containing 2.5% (w/v) aqueous potassium dichromate ($K_2Cr_2O_7$). Samples were examined for coccidia by brightfield microscopy first after flotation in Sheather's sugar solution (specific gravity = 1.30). However, because

oocysts wrinkled in this concentrated solution, it was diluted 50:50 with distilled water, then samples were centrifuged at low speed. The oocysts were pipetted from the top few mm of the flotation medium and resuspended in 0.5 ml distilled water. Measurements were taken on 30 sporulated oocysts (except 10 measurements on oocyst wall thickness and anterior and posterior refractile bodies) from a single turtle using a calibrated ocular micrometer and reported in micrometers (μm) with the ranges followed by the means in parentheses; photographs were taken using brightfield optics. Oocysts were c. 60 days old when measured and photographed. A host photovoucher was accessioned into the Arkansas State University Museum of Zoology (ASUMZ) Herpetological Collection, State University, Arkansas. Photovouchers of sporulated oocysts were accessioned into the Harold W. Manter Laboratory of Parasitology (HWML), Lincoln, Nebraska.

Oocysts of a coccidian matching the description of *E. chelydrae* (Ernst et al. 1969) were found in two turtles and are described below.

Apicomplexa: Eimeriidae***Eimeria chelydrae* Ernst, Stewart, Sampson, and Fincher, 1969 (Figs. 1-3)**

Oocysts subspheroidal, 12.5×11.3 (11–15 \times 10–13) with smooth, thin wall ~ 0.7 (0.5–0.8) thick that wrinkles easily in sucrose solution; shape index (L/W) 1.1 (1.0–1.3). Micropyle, oocyst residuum, and polar granule absent. Sporocysts ellipsoidal, 7.6×5.3 (6–10 \times 4–7); L/W 1.5 (1.3–1.8). Distinct nipple-like Stieda body present, substieda and parastieda bodies absent. Sporocyst residuum compact and rounded in 2 of 30 (7%) sporocysts, otherwise scattered within the sporocyst. Each sporozoite (not measured) contains a spheroidal anterior refractile body, 1.8 (1.5–2.0) and a spheroidal posterior refractile body, 2.5 (2.0–3.0). Nucleus not evident.

Host: Common snapping turtle, *Chelydra serpentina* (Linnaeus, 1758), (Reptilia: Testudines: Chelydridae) (adult male, 190 mm CL, photovoucher ASUMZ 33585, collected 29 May 2016).

New locality: Off US 259, 6.4 km N of Broken Bow, McCurtain County, Oklahoma (34° 5' 10.593"N, 94° 44' 27.7944"W).

Type-host and locality: *C. serpentina*, farm pond near Tifton, Tift County, Georgia (Ernst et al. 1969).

Other hosts and localities: *C. serpentina*, Arkansas (McAllister et al. 1990, 1994); Texas (McAllister et al. 1994).

Material deposited: Photovoucher deposited in the HWML 102962.

Prevalence: In 2 of 4 (50%) *C. serpentina*.

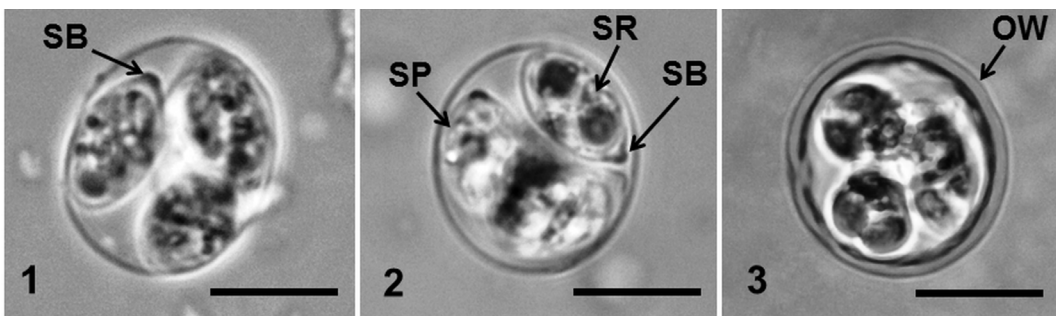
Sporulation time: Exogenous. All oocysts were passed unsporulated or partially sporulated and fully sporulated within 5 days at *c.*23°C.

Site of infection: Unknown; oocysts passed in feces.

Remarks

Although oocysts and sporocysts of our isolate of *E. chelydrae* were smaller (*vs.* 15.2×14.4 μm , L/W = 1.0 and 9.6×5.6 μm , L/W = 1.7) and the Stieda body was more distinct than that in the original description which was described as “small”, all other morphologies (including L/W ratios) matched those of *E. chelydrae* provided by Ernst et al. (1969). In addition, McAllister et al. (1990, Figs. 7–8) provided photomicrographs of *E. chelydrae* from *C. serpentina* from Arkansas and Texas and those clearly showed sporocysts with a prominent Stieda body.

In summary, we provide the first report of *E. chelydrae* documented from aquatic turtles found in Oklahoma. As other aquatic turtles from surrounding states (Arkansas, Texas) have been reported as common hosts of coccidians (McAllister and Upton 1989; McAllister et al. 1994), additional surveys could result in new distributional records as well as new host records. More importantly, the likelihood of



Figures 1–3. Sporulated oocysts of *Eimeria chelydrae* from *Chelydra serpentina* from Oklahoma. 1. Subspheroidal oocyst showing Stieda body (SB). 2. Another oocyst with SB, sporocyst (SP) and sporocyst residuum (SR). 3. Spheroidal oocyst showing oocyst wall (OW). Scale bars = 5 μm .

discovering new species of coccidia is also a distinct possibility.

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